

REMARKS

Claims 7, 29, 36 and 39 are currently pending in the application. Claims 1 to 6 had been previously canceled. Claims 7, 8, 10 to 29, 31 to 37, 39 to 41 and 43 were found to be unpatentable by Final Order of the Board of Patent Appeals and Interferences in Interference No. 104,831. Claims 9, 30, 38 and 42 were held to be patentable by Final Order of the Board of Patent Appeals and Interferences in Interference No. 104,831.

Applicants have amended Claims 7, 29, 36 and 39. Applicants have canceled Claims 8 to 28, 30 to 35, 37, 38 and 40 to 43.

Amendments

Applicants have amended Claim 7 to include the limitations of Claims 8 and 9.

Applicants have amended Claim 29 to include the limitations of Claim 30.

Applicants have amended Claim 36 to include the limitations of Claims 37 and 38.

Applicants have amended Claim 39 to include the limitations of Claims 40 to 42.

No new matter has been added by the current amendments.

Support for the Amendments is Found in the Specification as Filed

Amended Claims 7, 29, 36 and 39 include all of the limitations found allowable by Final Decision of the Board of Patent Appeals and Interferences. Applicants have further amended the claims to clarify certain aspects of the invention.

In particular, Applicants have amended the claims to recite that the cumene oxidation product feed stream and acetone recycle stream are continuously introduced into the decomposition reactor at a ratio of about 7:1. This amendment finds support in patentable Claims 9, 30, 38 and 42, which recite that the cumene oxidation product feed

stream is continuously introduced into said decomposition reactor at a rate of 1.62 parts by weight per minute; and wherein said acetone solution recycle stream is continuously introduced into said decomposition reactor at a rate of 0.230 parts by weight per minute. The respective feed rates of 1.62 parts per minute and 0.230 parts per minute correspond to a rate ratio of approximately 7:1.

The recitation of decomposition of cumene oxidation product in a non-isothermal manner is supported by the specification as filed at page 7, line 33 to page 8, line 10, which states that if the process is performed in a back-mixed reactor gradients of temperature and CHP concentration will exist. Applicants respectfully submit that this defines an non-isothermal process. In support, Applicants submit references from the Comprehensive Dictionary of Physical Chemistry and Van Nostrand's International Encyclopedia of Chemical Science. The Comprehensive Dictionary of Physical Chemistry defines an isothermal process as one conducted without a temperature change. Van Nostrand's defines an isothermal process as a thermodynamic process, during which the temperature remains constant.

Applicants respectfully submit that therefore a non-isothermal process is one where the temperature does not remain constant, i.e. gradients of temperature exist. This definition is consistent with the Decision of the Board of Patent Appeals and Interferences, issued on April 28, 2005. At pages 28 to 29 of the Decision, the Board interpreted the term "non-isothermal" as non-constant temperature.

CONCLUSION

Applicants believe that the foregoing amendments and remarks have placed the claims in condition for Allowance. Applicants therefore respectfully request prompt

action on the claims and allowance of the application. If the Examiner believes that personal communication will expedite prosecution of the application, the Examiner is invited to telephone Applicants' undersigned attorney directly.

AUTHORIZATION

Applicants believe that no extension of time is required to make submission of this response timely. However, in the event that an extension of time is required, Applicants hereby submit a petition for such extension of time as may be necessary to make this response timely. The Commissioner is hereby authorized to charge the necessary fees to deposit account No. 50-0573. A duplicate of this authorization is enclosed.

Respectfully Submitted,

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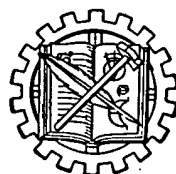


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INTERNATIONAL ENCYCLOPEDIA OF CHEMICAL SCIENCE



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25 Hollinger Road, Toronto 16, Canada

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Published simultaneously in Canada by
D. VAN NOSTRAND COMPANY (Canada), LTD.

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PRINTED IN THE UNITED STATES OF AMERICA

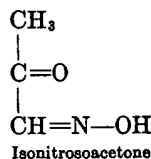
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sentative isonitroso compound has the formula



ISONUCLEAR. Occurring in the same nucleus.

1-ISOPENTENYL. 3-methyl-1-butenyl.

ISOPHTHALAL. See isophthalylidene.

ISOPHTHALOYL. The radical



ISOPHTHALYLIDENE. The radical

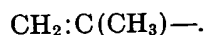


ISOPIESTIC SOLUTION. See solution, isopiestic.

ISOPLERE. A curve or graph corresponding to the condition of constant volume, as e.g., a plot of pressure versus temperature for a gas held at constant volume. Also termed isochore, isometric, and isopycnic.

ISOPOLYMORPHISM. The phenomenon of each of two forms of a *polymorphic* (see *polymorphism*) substance being *isomorphous* (see *isomorphism*) with two forms of another polymorphic substance, e.g., SnO_2 and TiO_2 , which are isotrimorphous.

ISOPROPENYL. The radical



ISOPROPOXY. The radical $(\text{CH}_3)_2\text{CHO}-$.

ISOPROPYL. The radical $(\text{CH}_3)_2\text{CH}-$.

ISOPROPYL ALCOHOL TEST (BOEHM-BODENDORF). Isopropyl alcohol is detected in alcoholic preparations by decolorizing with charcoal or by distillation, and performing a ring test with a 1% solution of *m*-nitrobenzaldehyde in sulfuric acid. A carmine-red ring on warming in hot water for 1 minute indicates the presence of isopropyl alcohol.

ISOROTATION RULES (HUDSON). See Hudson isorotation rules.

ISOSMOTIC. Having an identical osmotic pressure.

ISOSTERE, ADSORPTION. See adsorption isostere.

ISOSTERES. Pairs of compounds which show notable agreement in physical properties (as carbon dioxide and nitrous oxide; carbon monoxide and nitrogen) and which (according to the octet theory) have the same number and arrangement of electrons in the molecule. The term applies also to radicals and groups of atoms which hold pairs of electrons in common. These are termed isosteric compounds, and the phenomenon is called isosterism (Langmuir).

ISOSTERIC. See isosteres.

ISOSTERISM. See isosteres.

ISOTENISCOPE. An instrument used to measure vapor pressure. It consists essentially of a U-tube containing the liquid of which the vapor pressure is to be measured. One arm of the tube connects with a closed vessel containing the same liquid; the other arm is connected to a manometer. The pressure in the latter is adjusted to the value at which the liquid levels in both arms of the U-tube are the same. This is the vapor pressure of the liquid at the temperature of the test.

ISOTHERM(S). The same as isothermal (2) and (3).

ISOTHERM, ADSORPTION. See adsorption isotherm.

ISOTHERMAL. (1) Of constant temperature. Isothermal processes are those conducted without temperature change. (2) A line or curve expressing a relationship between variables such as pressure and volume, for all values of which the temperature remains constant. (3) A line joining points at the same temperature.

ISOTHERMAL COMPRESSION. Compression during which the temperature remains constant. In general, this will entail flow of heat into or out of the system.

ISOTHERM, REACT. (or more strictly, a *gr* expressing the change chemical reaction with in any arbitrary states

$$\Delta F = -RT \ln K +$$

where the *a*'s refer to arbitrary states and *w* the reactants and *L, M a, b ... l, m ...* der coefficients. For gases of unit activity at 1 a

$$\Delta F = -RT$$

where *K_p* is the equilibrium of partial pressures, at with arbitrary products given in the

ISOTHIOCYANATE a compound containi

ISOTHIOCYANATE Prepare a solution of ml sulfuric acid and On shaking this reagent of the liquid to boiling, precipitation of dithiomercuric substance of isothiocyanate

ISOTHIOCYANATE an organic compound

ISOTHIOCYANO.

ISOTONE. One having the same number of nuclei.

ISOTONIC. Having the same osmotic pressure as normal

ISOTOPE. One of the same atom having the same element number. In addition meaning of the term certain specialized as a synonym for nuclide used as a which it is isotopic

will encompass
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and the range of

COMPREHENSIVE DICTIONARY OF PHYSICAL CHEMISTRY

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ELLIS HORWOOD PTR PRENTICE HALL
NEW YORK LONDON TORONTO SYDNEY TOKYO SINGAPORE

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English Edition first published in 1992
in coedition between
ELLIS HORWOOD LIMITED
Market Cross House, Cooper Street,
Chichester, West Sussex, PO19 1EB, England

A division of
Simon & Schuster International Group
A Paramount Communications Company

and
ALFA Publishers
Bratislava, Czecho-Slovakia

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Translation: © 1992 Ellis Horwood Limited

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Printed in Czecho-Slovakia

British Library Cataloguing in Publication Data

A catalogue record for this book is available from the British Library

ISBN 0-13-151747-3

Library of Congress Cataloging-in-Publication Data

Comprehensive dictionaries of chemical science / editors L. Ulický, T. J. Kemp.
p. cm. — (Ellis Horwood series in chemical computation, statistics, and information)
Translated from the Slovak.
Includes bibliographical references and index.
Contents: v. I. Physical chemistry.
ISBN 0-13-151747-3: \$ 97.50
I. Chemistry—Dictionaries. I. Ulický, Ladislav. II. Kemp, T.
J. (Terence James), 1938— III. Series.
QD5.C4555 1992
540'.3—dc20

91-24322
CIP

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processes taking place in the direction in which the system approaches the equilibrium state (\nearrow spontaneous process).

ferent but which still exhibit the same structural type are said to be isostructural.

Ulický

Lisý

isolation method — synonym for \nearrow method of partial reaction orders.

isotherm \nearrow Boyle's law.

isomers — molecules stable over a period of time with identical chemical formulae but different molecular structures (\nearrow adiabatic potential).

isothermal decomposition curve — the graphical dependence of the conversion of a solid in time at a constant temperature (\nearrow decomposition of a solid).

Every isomer has a corresponding minimum on the adiabatic potential surface. Isomers may be distinguished when the height of the lowest energy barrier $\Delta E \geq 2h\nu$ where ν is the vibration frequency in the energy minimum. For low barriers separating narrow minima of the adiabatic potential surface, the static interpretation is useless and a dynamic model of stereochemically nonrigid (fluxional) molecules should be used.

The curves have an S-like shape and differ from each other in the initial time lag during which the rate of decomposition is low (\nearrow induction period). The unambiguous interpretation of these curves, i.e. the assignment of a mechanism to a particular curve, is impossible. However, for different models of the decomposition process, plots of conversion versus time t may be constructed and compared with experimental curves until the best fit is reached. The best-fit model should be further verified by other experimental techniques.

Pelikán

Miadoková

isomer shift \nearrow Mössbauer spectroscopy.

isometric mapping \nearrow coincidence operation.

isomorphism — the ability of some chemically similar substances to exchange mutually some of their component particles in \nearrow crystal structures, yielding a solid solution.

isothermal process — a change of the thermodynamic state of a system, i.e., a \nearrow thermodynamic process, during which the temperature remains constant, whereas the pressure or the volume, or both the pressure and volume, change.

Isomorphous substances can form solid solutions if their general chemical formula (AX , AX_2 , ABX_3 , etc.) and structural type is similar, and if the interatomic or interionic distances in their structures are approximately the same (within a tolerance of $<15\%$).

One of the simplest isothermal processes is, e.g., the isothermal volume compression of a gas, during which the gas accepts energy from its surroundings in the form of volume work and gives it up to the surroundings in the form of heat, so that its temperature does not change.

The conditions for an isomorphous replacement in ionic structures depend on the properties of the ions in question (the structure of their electron shells, ionic radii, charge, polarizability). The limits for isomorphous replacement also depend on the concentration of ions in a solution or a melt, and on pressure and temperature.

A system in which an exothermic chemical reaction takes place isothermally and at constant pressure, gives up energy to its surroundings in the form of heat, whereas during an endothermic reaction the energy is accepted in the form of heat. The \nearrow coefficient of isothermal compressibility is defined in terms of an isothermal process.

Lisý

Isomorphism is quite common in nature. It is the cause of the complex chemical composition of many minerals (e.g. silicates).

isotherm of adsorption from a solution — the equilibrium dependence of the quantity of an adsorbed substance on its concentration in solution at constant temperature (\nearrow adsorption isotherm).

The systems Ag/Au , $NaCl/AgCl$, NiO/CoO , KH_2PO_4/KH_2AsO_4 , $KMnO_4/BaSO_4$, etc., can be mentioned as examples of isomorphism.

If the solvent does not wet the solid surface, such dependences can be expressed mathematically by isotherms based on the theory of the adsorption of gases, e.g. the Freundlich or the Langmuir adsorption isotherms, where the pressure is replaced by the concentration c of the solution in the adsorption equilibrium. Hence, $a = kc^{1/n}$; or

Isomorphism was discovered in 1819 by the mineralogist E. MITSCHERLICH and its crystallochemical fundamentals were laid down by V. M. GOLDSCHMIDT who also introduced the notion of mutual substitution of ions.

Two substances which are chemically quite dif-